1 21. (Twice Amended) A (co)polymer, comprising:

one or more free radically (co)polymerizable monomers, wherein the polymer exhibits a stereochemistry and microstructure, as defined by tacticity and sequence distribution, of a material formed by a free radical polymerization process, and displays a molecular weight distribution of less than 2.0;

a residue of an initiator, wherein the residue is not a residue of a carbon tetrachloride initiator;

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a thermally stable end group selected from the group consisting of a halogen, Cl, Br, I, OH, CN, N_3, OR^{10}, SR^{14}, SeR^{14}, $OC(=O)R^{14}$, $OP(=O)R^{14}$, $OP(=O)(OR^{14})_2$, $O\text{-}N(R^{14})_2$, carboxylic acid halide, H, NH_2, COOH, and olefinic end groups, where R^{14} is aryl or a straight or branched C_1-C_{20} alkyl group or where an $N(R^{14})_2$ group is present, the two R^{14} groups may be joined to form a 5-, 6- or 7- member heterocyclic ring, and R^{10} is an alkyl of from 1 to 20 carbon atoms or an alkyl of from 1 to 20 carbon atoms in which each of the hydrogen atoms may be replaced by a halide, alkenyl of from 2 to 20 carbon atoms, alkynyl of from 2 to 10 carbon atoms, phenyl, phenyl substituted with from 1 to 5 halogen atoms or alkyl groups with from 1 to 4 carbon atoms, aralkyl, aryl, aryl substituted alkyl, in which the aryl group is phenyl or substituted phenyl and the alkyl group is from 1 to 6 carbon atoms;

a molecular weight in excess of two monomer units.

2 22. (Twice Amended) The polymer of claim 1 21, wherein at least one of the residue and end group comprise a functional group.

3 23. (Twice Amended) The polymer of claim 1 21, wherein the residue and end groups can be modified to be used in subsequent chemical reactions.

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4 24. (Amended) A block copolymer comprising two or more blocks of units obtained form free radically (co)polymerizable monomers, wherein the block copolymer has a residue from an initiator at one chain end and, at the other end of the polymer chain, a member selected from the group consisting of radically transferable atoms, radically transferable groups, halogen, Cl, Br, I, OH, CN, N_3, OR^{10}, SR^{14}, SeR^{14}, $OC(=O)R^{14}$, $OP(=O)R^{14}$, $OP(=O)(OR^{14})_2$, $O\text{-}N(R^{14})_2$, carboxylic acid halide, H, NH_2, COOH, and olefinic end groups, where R^{14} is aryl or a straight or branched C_1-C_{20} alkyl group or where an $N(R^{14})_2$ group is present, the two R^{14} groups may be joined to form a 5-, 6- or 7- member heterocyclic ring, and R^{10} is an alkyl of from 1 to 20 carbon atoms or an alkyl of from 1 to 20 carbon atoms in which each of the hydrogen atoms may be replaced by a halide, alkenyl of from 2 to 20 carbon atoms, alkynyl of from 2 to 10 carbon atoms, phenyl, phenyl substituted with from 1 to 5 halogen atoms or alkyl groups with from 1 to 4 carbon atoms, aralkyl, aryl, aryl substituted alkyl, in which the aryl group is phenyl or substituted phenyl and the alkyl group is from 1 to 6 carbon atoms.

6 28. (Twice Amended) A block copolymer, comprising:

at least two units obtained from one or more radically (co)polymerizable monomers, wherein each unit is substantially similar in microstructure and length such that the molecular weight distribution is less than 2; and

a residue from an initiator in the copolymer connecting the units; and

a member selected from the group consisting of radically transferable atoms, radically transferable groups, halogen, Cl, Br, I, OH, CN, N_3, OR^{10}, SR^{14}, SeR^{14}, $OC(=O)R^{14}$, $OP(=O)R^{14}$, $OP(=O)(OR^{14})_2$, $O\text{-}N(R^{14})_2$, carboxylic acid halide, H, NH_2, COOH, and olefinic end groups, where R^{14} is aryl or a straight or branched C_1-C_{20} alkyl group or where an $N(R^{14})_2$ group is present, the two R^{14} groups may be joined to form a

5-, 6- or 7- member heterocyclic ring, and R^{10} is an alkyl of from 1 to 20 carbon atoms or an alkyl of from 1 to 20 carbon atoms in which each of the hydrogen atoms may be replaced by a halide, alkenyl of from 2 to 20 carbon atoms, alkynyl of from 2 to 10 carbon atoms, phenyl, phenyl substituted with from 1 to 5 halogen atoms or alkyl groups with from 1 to 4 carbon atoms, aralkyl, aryl, aryl substituted alkyl, in which the aryl group is phenyl or substituted phenyl and the alkyl group is from 1 to 6 carbon atoms attached to the units.

~~27.~~ (Twice Amended) A copolymer comprising:

units obtained from free radically (co)polymerizable monomers, wherein the copolymer is formed by coupling two polymer chains, such that substantially each polymer chain has a residue of an initiator present on substantially each polymer chain end, wherein the polymer has a molecular weight distribution of less than 2.

~~32.~~ (Twice Amended) The block copolymer as claimed in claim ~~24~~, wherein said block copolymer is a poly(styrene-block-methyl acrylate) or a poly(methyl acrylate-block-styrene) (co)polymer.

~~34.~~ (Twice Amended) The (co)polymer as claimed in claim ~~21~~, wherein said (co)polymer is selected from the group consisting of linear, monofunctional, star and telechelic polystyrenes, linear and star poly(methyl acrylate)s, poly(butyl acrylate)s, poly(methyl methacrylate)s, and polyisoprenes, wherein the (co)polymer displays a tacticity of a polymer prepared by free radical polymerization .

~~35.~~ (Twice Amended) The (co)polymer claimed in claim ~~28~~, prepared by (co)polymerizing styrene and a monomer selected from methyl acrylate and methyl

methacrylate to yield polymers in which the (co)polymer has a composition that varies along the length of the (co)polymer based on the relative reactivity ratios of the monomers and the instantaneous concentrations of the monomers during the polymerization.

33. (Twice Amended) The (co)polymer of Claim 17, having a formula:

$$R^{11}R^{12}R^{13}C\text{-}(M^1)_p\text{-}X,$$

$$R^{11}R^{12}R^{13}C\text{-}(M^1)_p\text{-}(M^2)_p\text{-}X,$$

$$R^{11}R^{12}R^{13}C\text{-}(M^1)_p\text{-}(M^2)_p\text{-}(M^3)_p\text{-}X, \text{ or}$$

$$R^{11}R^{12}R^{13}C\text{-}(M^1)_p\text{-}(M^2)_p\text{-}(M^3)_p\text{-}\ldots\text{-}(M^t)_p\text{-}X$$

wherein X is selected from the group consisting of Cl, Br, I, OR^{10}, SR^{14}, SeR^{14}, $O\text{-}N(R^{14})_2$, $S\text{-}C(=S)N(R^{14})_2$, H, OH, N_3, NH_2, COOH,$CONH_2$, halogen, $OC(=O)R^{14}$, $OP(=O)R^{14}$, $OP(=O)(OR^{14})_2$, $O\text{-}N(R^{14})_2$, carboxylic acid halide, and olefinic end groups, where R^{14} is aryl or a straight or branched $C_1\text{-}C_{20}$ alkyl group or where an $N(R^{14})_2$ group is present, the two R^{14} groups may be joined to form a 5-, 6- or 7- member heterocyclic ring, and R^{10} is an alkyl of from 1 to 20 carbon atoms or an alkyl of from 1 to 20 carbon atoms in which each of the hydrogen atoms may be replaced by a halide, alkenyl of from 2 to 20 carbon atoms, alkynyl of from 2 to 10 carbon atoms, phenyl, phenyl substituted with from 1 to 5 halogen atoms or alkyl groups with from 1 to 4 carbon atoms, aralkyl, aryl, aryl substituted alkyl, in which the aryl group is phenyl or substituted phenyl and the alkyl group is from 1 to 6 carbon atoms ; and where

R^{10} is an alkyl of from 1 to 20 carbon atoms in which each of the hydrogen atoms may be independently replaced by halide, R^{14} is aryl or a straight or branched $C_1\text{-}C_{20}$ alkyl group, and where an $N(R^{14})_2$ group is present, the two R^{14} groups may be joined to form a 5- or 6-membered heterocyclic ring,

R^{11}, R^{12} and R^{13} are each independently selected from the group consisting of H,

halogen, C_1-C_{20} alkyl, C_3-C_8 cycloalkyl, $C(=Y)R^5$, $C(=Y)NR^6R^7$, COCl, OH, CN, C_2-C_{20} alkenyl, C_2-C_{20} alkynyl oxiranyl, glycidyl, aryl, heterocyclyl, aralkyl, aralkenyl, C_1-C_6 alkyl in which from 1 to all of the hydrogen atoms are replaced with halogen and C_1-C_6 alkyl substituted with from 1 to 3 substituents selected from the group consisting of C_1-C_4 alkoxy, aryl, heterocyclyl, $C(=Y)R^5$, $C(=Y)NR^6R^7$, oxiranyl and glycidyl,

where Y is NR^8, S or O,

where R^5 is an aryl or an alkyl of from 1 to 20 carbon atoms, alkoxy of from 1 to 20 carbon atoms, aryloxy or heterocyclyloxy; and R^6 and R^7 are independently H or alkyl of from 1 to 20 carbon atoms, or R^6 and R^7 may be joined together to form an alkylene group of from 2 to 5 carbon atoms, thus forming a 3- to 6-membered ring, such that no more than two of R^{11}, R^{12}, R^{13} are H,

R^8 is H, a straight or branched C_1-C_{20} alkyl or aryl, and

M^1, M^2, M^3,... up to M^t are each a radically (co)polymerizable monomer selected such that the monomers in adjacent blocks are not identical, and p is an average degree of polymerization for each monomer and is independently selected such that the number average molecular weight of each block is from 1000 to 250,000 g/mol, and

t is an integer greater than 3.

34. (Three Times Amended) The (co)polymer of Claim 64, having a formula:

$$X\text{-}(M^1)_p\text{-}(R^{11}R^{12}C)\text{-}(M^1)_p\text{-}X,$$

$$X\text{-}(M^2)_p\text{-}(M^1)_p\text{-}(R^{11}R^{12}C)\text{-}(M^1)_p\text{-}(M^2)_p\text{-}X,$$

$$X\text{-}(M^3)_p\text{-}(M^2)_p\text{-}(M^1)_p\text{-}(R^{11}R^{12}C)\text{-}(M^1)_p\text{-}(M^2)_p\text{-}(M^3)_p\text{-}X, \text{ or}$$

$$X\text{-}(M^t)_p\text{-}..\text{-}(M^3)_p\text{-}(M^2)_p\text{-}(M^1)_p\text{-}(R^{11}R^{12}C)\text{-}(M^1)_p\text{-}(M^2)_p\text{-}(M^3)_p\text{-}..\text{-}(M^t)_p\text{-}X$$

wherein R^{11}, R^{12}, X, M^1, M^2, M^3,... up to M^t, t, and p are as defined above.

35 48. (Amended) A graft or comb shaped copolymer comprising backbone and graft polymer segments wherein at least one of the backbone and graft polymer segments comprise radically (co)polymerizable monomers, wherein the polymer segments comprising radically polymerizable monomers comprises an average molecular weight dependent on the number of segments and the molecular weight and moles of the monomers in the segments and a molecular weight distribution of the segments of less than 2.

37 46. (Twice Amended) A polymer of the formula:

$$R^{11}R^{12}R^{13}C - (M^1)_p - X ,$$

$$X - (M^1)_p - R^{11}R^{12}C - (M^1)_p - X$$

$$R^{11'}R^{12'}R^{13'}C - \{(M^1)_p - X\}$$

wherein $\{(M^1)_p - X\}$ is a polymer chain where M^1 is a radically polymerizable monomer and each p is an average degree of polymerization for each block and is independently selected such that the number average molecular weight of the polymer is up to 1,000,000 g/mol,

X is selected from the group consisting of Cl, Br, I, OR^{10}, SR^{14}, $O\text{-}N(R^{14})_2$, $S\text{-}C(=S)N(R^{14})_z$, H, OH, N_3, NH_2, COOH and $CONH_2$, where

R^{10} is an aryl or an alkyl of from 1 to 20 carbon atoms in which each of the hydrogen atoms may be independently replaced by halide, R^{14} is aryl or a straight or branched C_1-C_{20}, alkyl group, and where an $N(R^{14})_2$ group is present, the two R^{14} groups may be joined to form a 5- or 6-membered heterocyclic ring,

R^{11}, R^{12} and R^{13} are each independently selected from the group consisting of H, halogen, C_1-C_{20} alkyl, C_3-C_8 cycloalkyl, $C(=Y)R^5$, $C(=Y)R^5$, $C(=Y)NR^6R^7$, COC1, OH, CN, C_2-C_{20} alkenyl, C_2-C_{20} alkynyl oxiranyl, glycidyl, aryl, heterocyclyl, aralkyl, aralkenyl, C_1-C_6 alkyl in which from 1 to all of the hydrogen atoms are replaced with halogen and C_1-C_6 alkyl substituted

with from 1 to 3 substituents selected from the group consisting of C_1-C_4 alkoxy, aryl, heterocyclyl, $C(=Y)R^5$, $C(=Y)NR^6R^7$, oxiranyl and glycidyl, where Y is NR^8,S or O;

R^8 is H, straight or branched C1-C20 alkyl or aryl;

$R^{11'}$, $R^{12'}$ and $R^{13'}$ are the same as R^{11}, R^{12} and R^{13} with the proviso that $R^{11'}$, $R^{12'}$ and $R^{13'}$ together comprise an additional 2 to 5 of the polymer chains;

R^5 is aryl, alkyl of from 1 to 20 carbon atoms, alkoxy of from 1 to 20 carbon atoms, aryloxy or heterocyclyloxy; and R^6 and R^7 are independently H or alkyl of from 1 to 20 carbon atoms, or R^6 and R^7 may be joined together to form an alkylene group of from 2 to 5 carbon atoms, thus forming a 3- to 6-membered ring,

such that no more than two of R^{11}, R^{12} and R^{13} are H,

and,

the polymer exhibits a stereochemistry characteristic of a free radical polymerized material in conjunction with a molecular weight distribution of less than 2.0.

40 ~~57~~. (Twice Amended) The (co)polymer of Claim ~~56~~ 39, wherein the monomer which contributes oleophobic properties to the (co)polymer is selected from the group consisting of (meth)acrylate and (meth)acrylonitrile monomers.

42 ~~59~~. (Twice Amended) The (co)polymer of Claim ~~58~~ 41, wherein the monomer which contributes oleophobic properties to the (co)polymer is selected from the group consisting of (meth)acrylate and (meth)acrylonitrile monomers.

43 ~~62~~. (Amended) The (co)polymer of claim ~~21~~ 1, wherein the (co)polymer displays a molecular weight distribution of less than 1.5.

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(Amended) The copolymer of claim 28, wherein the copolymer displays a molecular weight distribution of less than 1.5.

(Amended) A (co)polymer, exhibiting a stereochemistry and microstructure, as defined by tacticity and sequence distribution, of a polymer formed by a free radical polymerization process and displaying a molecular weight distribution of less than 2.0 and calculable number average molecular weight, having the formula:

$$R^{11}R^{12}R^{13}C\text{-}(M^1)_p\text{-}X,$$

$$R^{11}R^{12}R^{13}C\text{-}(M^1)_p\text{-}(M^2)_p\text{-}X,$$

$$R^{11}R^{12}R^{13}C\text{-}(M^1)_p\text{-}(M^2)_p\text{-}(M^3)_p\text{-}X, \text{ or}$$

$$R^{11}R^{12}R^{13}C\text{-}(M^1)_p\text{-}(M^2)_p\text{-}(M^3)_p\text{-}\ldots\text{-}(M^t)_p\text{-}X$$

wherein X is selected from the group consisting of Cl, Br, I, OR^{10}, SR^{14}, SeR^{14}, $O\text{-}N(R^{14})_2$, $S\text{-}C(=S)N(R^{14})_2$, H, OH, N_3, NH_2, COOH, $CONH_2$, halogen, $OC(=O)R^{14}$, $OP(=O)R^{14}$, $OP(=O)(OR^{14})_2$, carboxylic acid halide, and olefinic end groups, where R^{14} is aryl or a straight or branched C_1-C_{20} alkyl group or where an $N(R^{14})_2$ group is present, the two R^{14} groups may be joined to form a 5-, 6- or 7- member heterocyclic ring, and R^{10} is an alkyl of from 1 to 20 carbon atoms or an alkyl of from 1 to 20 carbon atoms in which each of the hydrogen atoms may be replaced by a halide, alkenyl of from 2 to 20 carbon atoms, alkynyl of from 2 to 10 carbon atoms, phenyl, phenyl substituted with from 1 to 5 halogen atoms or alkyl groups with from 1 to 4 carbon atoms, aralkyl, aryl, aryl substituted alkyl, in which the aryl group is phenyl or substituted phenyl and the alkyl group is from 1 to 6 carbon atoms , where

R^{10} is an alkyl of from 1 to 20 carbon atoms in which each of the hydrogen atoms may be independently replaced by halide, R^{14} is aryl or a straight or branched C_1-C_{20} alkyl group, and where an $N(R^{14})_2$ group is present, the two R^{14} groups

may be joined to form a 5- or 6-membered heterocyclic ring,

R^{11}, R^{12} and R^{13} are each independently selected from the group consisting of H, halogen, C_1-C_{20} alkyl, C_3-C_8 cycloalkyl, $C(=Y)R^5$, $C(=Y)NR^6R^7$, COCl, OH, CN, C_2-C_{20} alkenyl, C_2-C_{20} alkynyl oxiranyl, glycidyl, aryl, heterocyclyl, aralkyl, aralkenyl, C_1-C_6 alkyl in which from 1 to all of the hydrogen atoms are replaced with halogen and C_1-C_6 alkyl substituted with from 1 to 3 substituents selected from the group consisting of C_1-C_4 alkoxy, aryl, heterocyclyl, $C(=Y)R^5$, $C(=Y)NR^6R^7$, oxiranyl and glycidyl,

where Y is NR^8, S or O;

where R^5 is an aryl or an alkyl of from 1 to 20 carbon atoms, alkoxy of from 1 to 20 carbon atoms, aryloxy or heterocyclyloxy; and R^6 and R^7 are independently H or alkyl of from 1 to 20 carbon atoms, or R^6 and R^7 may be joined together to form an alkylene group of from 2 to 5 carbon atoms, thus forming a 3- to 6-membered ring, such that no more than two of R^{11}, R^{12} and R^{13} are H, and R^8 is H, a straight or branched C_1-C_{20} alkyl or aryl, and

M^1, M^2, M^3,... up to M^t are each monomer units derived from radically (co)polymerizable monomer selected such that the monomers units in adjacent blocks are not identical, and t is an integer greater than 3; p is an average degree of polymerization for each block is independently selected such that the number average molecular weight of each block is up to 250,000 g/mol;

the following formulas:

$$X\text{-}(M^1)_p\text{-}(R^{12}R^{13}C)\text{-}(R^{11})\text{-}(M^1)_p\text{-}X,$$

$$X\text{-}(M^2)_p\text{-}(M^1)_p\text{-}(R^{12}R^{13}C)\text{-}(R^{11})\text{-}(M^1)_p\text{-}(M^2)_p\text{-}X,$$

$$X\text{-}(M^3)_p\text{-}(M^2)_p\text{-}(M^1)_p\text{-}(R^{12}R^{13}C)\text{-}(R^{11})\text{-}(M^1)_p\text{-}(M^2)_p\text{-}(M^3)_p\text{-}X, \text{ or}$$

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$$X\text{-}(M^t)_p\text{-}..\text{-}(M^3)_p\text{-}(M^2)_p\text{-}(M^1)_p\text{-}(R^{12}R^{13}C)\text{-}(R^{11})\text{-}(M^1)_p\text{-}(M^2)_p\text{-}(M^3)_p\text{-}..\text{-}(M^t)_p\text{-}X$$

wherein R^{11}, R^{12}, R^{13}, X, M^1, M^2, M^3,... up to M^t, t, and p are as defined above, with the provisio that R^{11} has a polymer chain as indicated attached thereto;

of the formulas:

$$(R^{11'}R^{12'}R^{13'}C)\text{-}\{(M^1)_p\text{-}X\},$$

$$(R^{11'}R^{12'}R^{13'}C)\text{-}\{(M^1)_p\text{-}(M^2)_p\text{-}X\},$$

$$(R^{11'}R^{12'}R^{13'}C)\text{-}\{(M^1)_p\text{-}(M^2)_p\text{-}(M^3)_p\text{-}X\}, \text{ or}$$

$$(R^{11'}R^{12'}R^{13'}C)\text{-}\{(M^1)_p\text{-}(M^2)_p\text{-}(M^3)_p\text{-}...\text{-}(M^t)_p\text{-}X\}$$

wherein $\{(M^1)_p\text{-}X\}$, $\{(M^1)_p\text{-}(M^2)_p\text{-}X\}$, $\{(M^1)_p\text{-}(M^2)_p\text{-}(M^3)_p\text{-}X\}$, and $\{(M^1)_p\text{-}(M^2)_p\text{-}(M^3)_p\text{-}...\text{-}(M^t)_p\text{-}X\}$ are polymer chains, $R^{11'}$, $R^{12'}$ and $R^{13'}$ are the same as R^{11}, R^{12} and R^{13} as previously defined with the proviso that $R^{11'}$, $R^{12'}$ and $R^{13'}$ together comprise an additional 2 to 5 of the polymer chains , where X is as defined above;

M^1, M^2, M^3, ... M^t , p, and t are as defined above; and

and copolymers comprising a block or graft with the above composition; and

of the formula:

$$R^{11}R^{12}R^{13}C\text{-}(M^1{}_aM^2{}_b)\text{-}(M^1{}_cM^2{}_d)\text{-}(M^1{}_eM^2{}_f)\text{-}...\text{-}(M^1{}_\alpha M^2{}_\beta)\text{-}(M^1{}_\gamma M^2{}_\delta)\text{-}X, \text{ or}$$

$$R^{11'}R^{12'}R^{13'}C\text{-}\{(M^1{}_aM^2{}_b)\text{-}(M^1{}_cM^2{}_d)\text{-}(M^1{}_eM^2{}_f)\text{-}...\text{-}(M^1{}_\alpha M^2{}_\beta)\text{-}(M^1{}_\gamma M^2{}_\delta)\text{-}X\}$$

wherein $\{(M^1{}_aM^2{}_b)\text{-}(M^1{}_cM^2{}_d)\text{-}(M^1{}_eM^2{}_f)\text{-}...\text{-}(M^1{}_\alpha M^2{}_\beta)\text{-}(M^1{}_\gamma M^2{}_\delta)\text{-}X\}$ is a polymer chain, R^{11}, R^{12}, R^{13} are as defined above, M^1 and M^2 are as defined above and where $R^{11'}$, $R^{12'}$ and $R^{13'}$ are the same as R^{11}, R^{12} and R^{13} with the proviso that $R^{11'}$, $R^{12'}$ and $R^{13'}$ together comprise an additional 1 to 5 of the polymer chains , and

a, b, c, d, e, f, α, β, γ, δ and such parameters for any intervening blocks are molar percentages of monomer in each block and are independently selected such that a + b = c + d = 100%, and any or all of (e + f), (α + β) and (γ+ δ) = 100% or 0, wherein the a:b ratio is from 100:0 to 0:100, the c:d ratio is from 95:5 to 5:95, such that c < a and d > b, and where applicable, the e:f ratio is from 90:10 to 10:90, such that e < c and f > d, and the endpoints of the molar ratio ranges of first monomer to second monomer in successive blocks progressively decrease or increase such that the e:f ratio is from 5:95 to 95:5, such that e ≠ c and f ≠ d, and the γ:δ ratio is from 0:100 to 100:0, such that γ ≠ e and δ≠ f.

66. (Amended) The (co)polymer of Claim 64, having a formula:

$$(R^{11'}R^{12'}R^{13'}C)\text{-}\{(M^1)_p\text{-}X\},$$

$$(R^{11'}R^{12'}R^{13'}C)\text{-}\{(M^1)_p\text{-}(M^2)_p\text{-}X\},$$

$$(R^{11'}R^{12'}R^{13'}C)\text{-}\{(M^1)_p\text{-}(M^2)_p\text{-}(M^3)_p\text{-}X\}, \text{ or}$$

$$(R^{11'}R^{12'}R^{13'}C)\text{-}\{(M^1)_p\text{-}(M^2)_p\text{-}(M^3)_p\text{-}...\text{-}(M^t)_p\text{-}X\}$$

wherein $\{(M^1)_p\text{-}X\}$, $\{(M^1)_p\text{-}(M^2)_p\text{-}X\}$, $\{(M^1)_p\text{-}(M^2)_p\text{-}(M^3)_p\text{-}X\}$, and $\{(M^1)_p\text{-}(M^2)_p\text{-}(M^3)_p\text{-}...\text{-}(M^t)_p\text{-}X\}$ are polymer chains, $R^{11'}$, $R^{12'}$ and $R^{13'}$ are the same as R^{11}, R^{12} and R^{13} as previously defined with the proviso that $R^{11'}$, $R^{12'}$ and $R^{13'}$ together comprise an additional 2 to 5 of the polymer chains, where X is as defined above;

M^1, M^2, M^3,.M^t, p and t are as defined above,

and copolymers comprising a block or graft with the above composition.

67. (Amended) The (co)polymer of Claim 64, having the formulae:

$$R^{11}R^{12}R^{13}C\text{-}(M^1{}_aM^2{}_b)\text{-}(M^1{}_cM^2{}_d)\text{-}(M^1{}_eM^2{}_f)\text{-}...\text{-}(M^1{}_\alpha M^2{}_\beta)\text{-}(M^1{}_\gamma M^2{}_\delta)\text{-}X, \text{ or}$$

$$(R^{11'}R^{12'}R^{13'}C)\text{-}\{(M^1{}_aM^2{}_b)\text{-}(M^1{}_cM^2{}_d)\text{-}(M^1{}_eM^2{}_f)\text{-}...\text{-}(M^1{}_\alpha M^2{}_\beta)\text{-}(M^1{}_\gamma M^2{}_\delta)\text{-}X\}$$

where R^{11}, R^{12}, R^{13}, and X are as previously defined, and where $R^{11'}$, $R^{12'}$ and $R^{13'}$ are the same as R^{11}, R^{12} and R^{13} with the proviso that $R^{11'}$, $R^{12'}$ and $R^{13'}$ comprise an additional 1 to 5 of the polymer chains enclosed in square brackets ,

M^1 and M^2 are monomer units derived from different radically (co)polymerizable monomers, and a, b, c, d, e, f, α, β, γ, δ and such parameters for any intervening blocks are molar percentages of monomer in each block and are independently selected such that a + b = c + d = 100%, and any or all of (e + f), (α + β) and (γ + δ) = 100% or 0, wherein the a:b ratio is from 100:0 to 0:100, the c:d ratio is from 95:5 to 5:95, such that c < a and d > b, and where $e \neq 0$ and $f \neq 0$, the e:f ratio is from 90:10 to 10:90, such that e < c and f > d, and the endpoints of the molar ratio ranges of first monomer to second monomer in successive blocks progressively decrease or increase such that the e:f ratio is from 5:95 to 95:5, such that $e \neq c$ and $f \neq d$, and the γ:δ ratio is from 0:100 to 100:0, such that $\gamma \neq e$ and $\delta \neq f$

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20 ~~68~~. (New) A polymer, comprising:

one or more free radically (co)polymerizable monomers, wherein the (co)polymer exhibits a stereochemistry and microstructure, as defined by tacticity and sequence distribution, of a material formed by a free radical polymerization process;

a molecular weight distribution of less than 2.0;

residues of a polymerization initiator at each polymer end; and

a number average molecular weight in excess 20,000 g/mol.

21 ~~69~~. (New) The polymer of claim 20 ~~68~~, wherein the residues comprise functional groups.

70. (New) The polymer of claim 68, wherein the polymer is selected from the group consisting of poly(methacrylate), poly(butylacrylate), poly(methylmethacrylate) and polyisoprene having a residue from a free radical initiator at one end of each polymer chain and a radically transferable group at the other end of each polymer chain end.

71. (New) The polymer of Claim 68, wherein the polymer is a solvent-resistant ABA block copolymer comprising a monomer which contributes oleophobic properties to the polymer.

72. (New) The polymer of Claim 71, wherein the monomer is selected from the group consisting of (meth)acrylate and (meth)acrylonitrile monomers.

73. (New) The polymer of Claim 68, wherein the polymer is a ABA random copolymer, wherein the A block comprises a monomer which contributes oleophobic properties to the polymer.

74. (New) The polymer of Claim 73, wherein the monomer is selected from the group consisting of (meth)acrylate and (meth)acrylonitrile monomers.

75. (New) The polymer of claim 68, wherein the polymer displays a molecular weight distribution of less than 1.5.

76. (New) A solvent resistant ABA block (co)polymer, comprising:

one or more free radically (co)polymerizable monomers, wherein the polymer exhibits a stereochemistry and microstructure, as defined by tacticity and sequence distribution, of a material formed by a free radical polymerization process, displays a molecular weight distribution of less than 2.0, and

thermally stable residues of a polymerization initiator at each polymer end which will not thermally dissociate from the (co)polymer at temperatures below 150°C in the absence of a catalyst at predominantly each polymer chain end and a molecular weight in excess of two monomer units, wherein the A block comprises a monomer which contributes oleophobic properties to the (co)polymer.

77. (New) The solvent resistant ABA block (co)polymer of claim 28, wherein the monomer which contribute oleophobic properties to the (co)polymer is selected from the group consisting of (meth)acrylate and (meth)acrylonitrile monomers.

78. (New) An solvent resistant ABA random (co)polymer, comprising:

one or more free radically (co)polymerizable monomers, wherein the polymer exhibits a stereochemistry and microstructure, as defined by tacticity and sequence distribution, of a material formed by a free radical polymerization process, displays a molecular weight distribution of less than 2.0, and

thermally stable residues of a polymerization initiator at each polymer end which will not thermally dissociate from the (co)polymer at temperatures below 150°C in the absence of a catalyst at predominantly each polymer chain end and a molecular weight in excess of two monomer units, wherein the A block comprises a monomer which contributes oleophobic properties to the (co)polymer.

79. (New) The (co)polymer of Claim 56, wherein the monomer which contributes oleophobic properties to the (co)polymer is selected from the group consisting of (meth)acrylate and (meth)acrylonitrile monomers.

80. (New) A block copolymer, comprising:

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at least two units obtained from one or more radically (co)polymerizable monomers, wherein each unit is substantially similar in microstructure and similar in microstructure and length such that the molecular weight distribution is less than 2; and

a residue from an initiator in the copolymer; and

a radically transferable atom or group at each polymer chain end, wherein the block copolymer is a poly(styrene-block-acrylate-block-styrene) copolymer having a radically transferable atom or group at each polymer chain end.

REMARKS

In the subject application, claims 1-14, 21-36, 38, 39 and 43-67 are pending. Claims 1-14, 46-54, 60 and 61 are withdrawn from consideration in the subject application due to an earlier restriction requirement. In the Office Action, claims 21-28, 31, 32, 34-36, 38, 39, 43, 55 and 62-67 are rejected and claims 29, 30, 33, 44, 45 and 56-59 are objected to.

In the Claims

Claim 45 is objected to because the claim contains bracketing both for the indication of material to be deleted from the claim and for the material to be retained in the chemical structure. Applicants have amended claim 45 to clearly indicate the material to be retained in the claim and to correct the typographical error in the claim.

Claims 43, 35 and 36 are rejected under 35 U.S.C. §112, second paragraph, because in the Examiner's opinion the claims are indefinite for failing to point out and distinctly claim the invention. Applicants disagree that the terms "controlled", "a composition that changes in a predictable manner", and "predetermined" render the respective claims indefinite. However, Applicants have amended the claims to expedite prosecution of the polymer claims.

In claim 43, Applicants have amended the claim to replaced the term "controlled"